REMARKS

Reconsideration and withdrawal of the rejections to this application are respectfully requested in view of the following amendments and remarks which place the application into condition for allowance.

I. STATUS OF CLAIMS AND FORMAL MATTERS

Claims 1-21 are pending. Claims 1 and 14 are amended to advance prosecution and to place the claims in condition for allowance.

No new matter has been added.

The amendments and the remarks made herein are not made for reasons related to patentability and, thus, do not prevent the application of the doctrine of equivalents. Support for the amended recitations in the claims and for the new claims are found throughout the specification.

II. OBJECTION TO SPECIFICATION

The abstract was objected to for alleged informalities. The abstract has been amended thereby obviating the objections.

Consequently, reconsideration and withdrawal of the objections to the specification are respectfully requested.

III. 35 U.S.C. §101 REJECTION

Claim 1 was rejected under 35 U.S.C. §101 as allegedly reciting a use. The rejection is traversed.

Although Applicants disagree with the Examiner's rejection, claim 1 is amended herein to replace "used" with the term "applied," thereby obviating the rejection. Consequently, reconsideration and withdrawal of the Section 101 rejection are respectfully requested.

IV. 35 U.S.C. §112, FIRST PARAGRAPH, REJECTION

Claims 1-21 were rejected under 35 U.S.C. §112, first paragraph, for allegedly not being enabled. The rejection is traversed.

It is respectfully submitted that the assertions in the Office Action that undue experimentation is required to practice the instantly claimed invention are inaccurate. The Examiner is respectfully invited to review *In re Wands*, 8 U.S.P.Q. 2d 1400 (Fed. Cir. 1988), wherein the Federal Circuit stated at 1404 that:

> Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. 'The key word is undue, not experimentation.' The determination of what constitutes undue experimentation in a given case requires the application of standard of reasonableness, having due regard for the nature of the invention and the state of the art. The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed ... [Citations omitted].

Against this background, determining whether undue experimentation is required to practice a claimed invention turns on weighing the factors summarized in *In re Wands*. These factors include, for example, (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples of the invention; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of

those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims; all of which must be taken into account.

Contrary to the Examiner's allegations to the contrary, the instant invention is enabled. For example, the compounds of formula (I) have a core moiety in common, namely the bicyclic system linked to the group G-L. The examples in the instant specification show a similar effect of the compounds even when the group G-L is varied (*see, e.g.*, the definitions of A and G-L in the compounds 1-1, 12-1, 21-1, 21-3, 22-2, 28-1,44-1 and 159-3). Further, the group of heterocyclic rings involved in the core of formula (I) is narrow, and some of the heterocyclic systems are tautomers or stereoisomers of other heterocyclic systems, thereby obviating any allegation that the scope of the claims is so broad to be unmanageable. The specification, therefore, is replete with guidance for a skilled artisan to practice the instant invention without undue experimentation.

Further, the instant invention is directed to, for example, inhibitors of ADA in mammalian hosts as well as inhibitors of AMPDA in plants. The effect of plant AMPDA is clearly shown in the biological examples in the specification.

Applicants also disagree with the allegation that embodiments like SF_5 are inoperative or unstable (Office Action, at 5). Attached hereto are abstracts showing that the SF_5 is known in the art to be operative and stable.

Thus, applying *Wands*, the following, *inter alia*, is clear: the quantity of experimentation necessary to practice the invention is low; the amount of guidance in the specification is high; the nature of the invention is not such that "an inordinate amount of experimentation" is required; the relative skill of those in the art is high; the art is predictable; and the breadth of the claims is

narrow. Thus, and contrary to the allegations in the Office Action, undue experimentation would not be necessary to practice the instantly claimed invention.

Consequently, reconsideration and withdrawal of the Section 112, first paragraph, rejections for alleged lack of enablement are respectfully requested.

V. 35 U.S.C. §112, SECOND PARAGRAPH, REJECTIONS

Claims 1-9, 11, 14 and 18-21 were rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite. The rejection is traversed.

The amendments to claims 1 and 14 render the rejections based on those claims moot. Further, the Examiner is respectfully reminded that a claim is definite if the scope of the subject matter embraced by a claim is clear and if the applicant has not otherwise indicated that he intends the claims to be of a different scope. *In re Borkowski*, 164 U.S.P.Q. 642 (C.C.P.A. 1970). The "distinctly claim" requirement of 35 USC § 112, second paragraph, means that the claims must have a clear and definite meaning when construed in light of the complete patent document. *Standard Oil Co. v. American Cyanamid Co.*, 227 U.S.P.Q. 293 (Fed. Cir. 1985). The test of definiteness is whether one skilled in the art would understand the scope of the claim when read in light of the specification. *Morton Int. Inc. v. Cardinal Chem. Co.*, 28 U.S.P.Q.2d 1190 (Fed. Cir. 1993). And the degree of precision necessary is a function of the subject matter claimed. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 231 U.S.P.Q. 81, 94-95 (Fed. Cir. 1986). Indeed, the Federal Circuit noted in *Hybritech* that:

> '[I]f the claims, read in light of the specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more' [and] the claims are clearly definite.

Id. at 94 (*citing to Shatterproof Glass Corp. v. Libbey Owens Ford Co.*, 225 U.S.P.Q. 634, 641 (Fed. Cir. 1985)) (emphasis added).

Against this background, the instant claims are definite. Applicants provide the following clarifying remarks:

As to claim 1, line 27, "unsubstituted or substituted" refers to the optional substitution of the 23 radicals listed, starting with monoalkylamino followed by dialkylamino. Further, the phrase "unsubstituted or substituted" in line 19 does not refer to a radical within the list of 23 radicals but, instead, relates to the term "aminosulfonyl," (forming unsubstituted or substituted aminosulfonyls). Thus, the requirements of Section 112, second paragraph, are satisfied.

As to claim 1, line 59, the text covers the alternative where the bridge in question is substituted with one or more groups selected from the substituents defined under (a), (b) and (c). The wording is quite clear and definite.

Turning to claim 1, lines 62-64, the definition includes the formation of cyclic rings by replacing a saturated bond in L with a bond forming the bridge. Examples of such cyclic formations are shown as examples 58-1 and 105-1.

As to claim 1, lines 65-66, the definition is clear from the term "inorganic or organic oxygen acid," support for which is found in the specification on pages 13 and 14.

With respect to claim 1, lines 69-70, Applicants disagree with the allegation that "aryl" and "heterocycle" are incomplete. Such terms are widely used in the art and are also defined in the instant specification on page 10, third paragraph, and page 11, first paragraph.

Turning to claim 1, lines 83-85, the definitions of heterocyclyl and heteroaryl are not definitions of a compound. Instead, they refer to the same terms recited in the paragraph.

As to claim 8, line 8, the definition is clear from the functional term "Z is a precursor of the radical G-L" and is further illustrated in the specification at page 30, lines 1-26. Further, the possible reactions are derivatization reactions within the knowledge of a skilled artisan and determined by the synthetic goal G-L.

Applicants also disagree with the allegation that claim 8 is incomplete. Claim 8 relates to a process for preparing a compound of the formula (I) or a salt thereof as defined in claim 1. Certain symbols are used in the formula of the process steps. At the end of the list of steps, reference is made to the symbols used in the formulae and the symbols are "defined as in formula (I), unless specifically defined otherwise," i.e., they are defined by the definition of the formula (I) compound to be prepared or as otherwise defined in the claim (such as a precursor of the radical). The definition is, therefore, complete.

With respect to claim 8, line 11, the term "modifying" is clear and definite from the reference to Z as a precursor of the group G-L, which is structurally defined and, thus, defines Z. The specific modification steps are known to a skilled artisan and the process gives sufficient guidance to prepare the compounds.

Applicants further disagree with the rejection of claim 19. Claim 19 depends from claim 18. Claim 19 relates to a particular function for treating diseases which can be influenced by the inhibitory effect of the compounds of formula (I) for ADA or AMPDA.

As to claims 20 and 21, claim 20 depends from claim 19, not from claim 1. And with respect to claim 21, the claim defines the process by "formulating the compound (I) into a pharmaceutical composition" wherein the formulating steps are analogous to methods known in the art.

Thus, applying the law to the instant facts, as the instant claims, read in light of the specification, apprise a skilled artisan of both the utilization and scope of the invention, and as the language is as precise as the subject matter permits, the instant claims are definite. A contrary conclusion, as posited by the Office Action, would not only be against public policy, but would also be impermissible as a matter of law. *See Hybritech*, 231 U.S.P.Q. at 95 ("As a matter of law, no court can demand more.").

Consequently, reconsideration and withdrawal of the Section 112, second paragraph, rejections are respectfully requested.

VI. 35 U.S.C. §102 REJECTIONS

Claims 7 and 18-20 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by the Duffy, Gewald, and Milne documents. The rejection is traversed. None of the three documents teaches or enables each and every element of the claimed invention.

More specifically, structure 5a in Duffy has the radical CO_2Et attached directly to a bicyclic system. The instant invention, by contrast, utilizes bridge L (e.g., CH_2).

Gewald compound 12b lacks a second nitrogen atom in the six-membered ring of the bicyclic system. Compound 12b, therefore, does not fall within the scope of the claimed invention.

Further, Milne compound "3" is cited in the instant specification at page 7, first paragraph. The Milne compound is distinguishable from the compounds of claim 7, as claim 7 excludes "the compound of the formula (I) in which A = CH, D = C, E = NH and G-L = ß-D-ribofuranosyl."

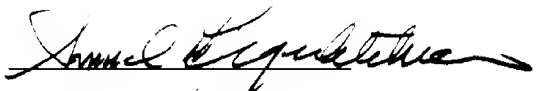
Thus, as each and every element of the claimed invention is neither taught nor enabled by the cited documents, the Section 102(b) rejections must fall. Reconsideration and withdrawal of the Section 102 rejections based on the preceding documents are, therefore, respectfully requested.

CONCLUSION

In view of the amendments and remarks herewith, the application is in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance, or an interview at a very early date with a view to placing the application in condition for allowance, are earnestly solicited. The undersigned looks forward to hearing favorably from the Examiner at an early date.

Respectfully submitted,

FROMMER LAWRENCE & HAUG LLP

By: 

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A new method for the synthesis of aromatic sulfur pentafluorides and studies of the stability of the sulfur pentafluoride group in common synthetic transformations. Bowden, Roy D.; Comina, Paul J.; Greenhall, Martin P.; Kariuki, Benson M.; Loveday, Amanda; Philp, Douglas. School of Chemistry, University of Birmingham, Birmingham, UK. Tetrahedron (2000), 56(21), 3399-3408. CODEN: TETRAB ISSN: 0040-4020. Journal written in English. CAN 133:163930 AN 2000:373669 CAPLUS (Copyright 2003 ACS)

Abstract

A new synthesis of arom. sulfur pentafluoride compds. is described. Subsequent elaboration of the arom. rings in the presence of the sulfur pentafluoride group is also discussed for a variety of common synthetic methods. This paper also describes ab initio electronic structure calcns. of 3- and 4-aminophenylsulfur pentafluoride, compared with 3- and 4-aminobenzotrifluoride, and presents X-ray crystal structures of two arom. sulfur pentafluoride derivs.

Preparation of pentafluorosulfanylphenyl- and -benzoylisoxazoles and analogs as herbicides. Hawkins, David William. (Rhone-Poulenc Agriculture Ltd., UK). Ger. Offen. (1997), 31 pp. CODEN: GWXXBX DE 19711953 A1 19970925 Patent written in German. Application: DE 97-19711953 19970321. Priority: GB 96-6015. CAN 127:307376 AN 1997:651301 CAPLUS (Copyright 2003 ACS)

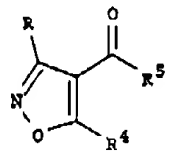
Patent Family Information

Patent No.	Kind	Date	Application No.	Date
DE 19711953	A1	19970925	DE 1997-19711953	19970321
GB 2311288	A1	19970924	GB 1997-3993	19970226
GB 2311288	B2	19981007		
FR 2746393	A1	19970926	FR 1997-3645	19970320
BR 9700435	A	19980825	BR 1997-435	19970320
CH 692949	A	20021231	CH 1997-677	19970320
JP 10036206	A2	19980210	JP 1997-68821	19970321
US 5849928	A	19981215	US 1997-822926	19970321
US 6013805	A	20000111	US 1998-162062	19980929
US 6140528	A	20001031	US 1999-444461	19991122

Priority Application Information	
GB 1996-6015	19960322
US 1997-822926	19970321
US 1998-162062	19980929

Abstract

Title compds. [I or R1COCH(CN)COZSF5; R = H or CO2R3; R1 = (halo)alkyl or (un)substituted cycloalkyl; R3 = (un)substituted alkyl or -phenyl; 1 of R4,R5 = R1 and the other = ZSF5; Z = (un)substituted phenylene] were prepd. Thus, R1COCH2CO2CMe3-Mg enolate (R1 = cyclopropyl) was condensed with 4-(F5S)C6H4COCl (prepn. given) and the product condensed with HC(OEt)3 to give R1COC(:CHOEt)COC6H4(SF5)-4 (R1 = cyclopropyl) which was cyclocondensed with HONH2.HCl to give I [R = H, R4 = C6H4(SF5)-4, R5 = cyclopropyl]. Data for biol. activity of title compds. were given.



I

Herbicidal compounds having a pentafluorosulfanyl group. Barton, John Edward Duncan; Mitchell, Glynn. (Zeneca Ltd., UK). Brit. UK Pat. Appl. (1994), 34 pp. CODEN: BAXXDU GB 2276379 A1 19940928 Patent written in English. Application: GB 94-2353 19940208. Priority: GB 93-6183. CAN 123:82948 AN 1995:682557 CAPLUS (Copyright 2003 ACS)

Patent Family Information

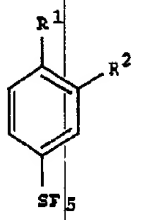
Patent No.	Kind	Date	Application No.	Date
GB 2276379	A1	19940928	GB 1994-2353	19940208

Priority Application Information

GB 1993-6183 19930325

Abstract

Herbicidal dinitroaniline, arylurea, 2-phenylpyridazin-3-one, di-Ph ether, phenoxyphenoxypropionate, heteroaryloxyphenoxypropionate, arylanilide, or substituted phenylpyrrolidone derivs., having a Ph or pyridyl group which carries a pentafluorosulphanyl (SF5) group, are disclosed, along with novel intermediates I [R1, R2 = halo; or R1 = amino and R2 = halo; or R1 = halo and R2 = NO2]. For example, 4-(F5S)C6H4NO2 underwent Fe-HCl redn. of the nitro group to amino, ring chlorination with N-chlorosuccinimide, and diazotization/chlorination of the amino group, to give I (R1 = R2 = Cl). This underwent phenolic etherification with 3-HOC6H4CO2H, followed by esterification of the acid function with SOCl2 and MeOH, and nitration with KNO3 and H2SO4, to give title compd. II. At 125 g/ha postemergence, II gave 90-100% control of several weeds, including Chenopodium album, Amaranthus retroflexus, Ipomoea hederacea, and Abutilon theophrasti.



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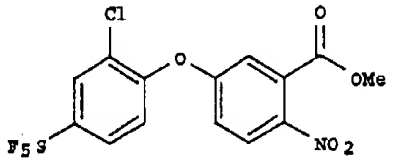


II

New fluorination technology - new fluorinated compounds. Walker, Phil. Fluorochem Limited, Old Glossop/Derbyshire, UK. Speciality Chemicals (1996), 16(5), 178. CODEN: SPCHEY ISSN: 0262-2262. Journal; General Review written in English. CAN 125:300506 AN 1996:654579 CAPLUS (Copyright 2003 ACS)

Abstract

A review with no refs. Industrial fluorination processes and fluorination agents were discussed. The Fluorodec system delivers fluorine on demand from an electrochem. cell.

Preparation of polyfluorinated aromatic or heterocyclic derivatives with sulfur pentafluoride group(s). Bowden, Roy Dennis; Greenhall, Martin Paul. (F2 Chemicals Limited, UK). PCT Int. Appl. (2002), 11 pp. CODEN: PIXXD2 WO 0242263 A1 20020530 Designated States W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM. Designated States RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG. Patent written in English. Application: WO 2001-GB5165 20011123. Priority: GB 2000-28797. CAN 137:5767 AN 2002:408638 CAPLUS (Copyright 2003 ACS)

Patent Family Information

Patent No.	Kind	Date	Application No.	Date
WO2002042263	A1	20020530	WO2001-GB5165	20011123
		W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		
		RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG		
AU 2002020819	A5	20020603	AU 2002-20819	20011123

Priority Application Information	
GB 2000-28797	20001125
WO2001-GB5165	20011123

Abstract

The invention provides polyfluorinated arom. or heterocyclic compds. comprising at least three ring substituents, at least one of which comprises a sulfur pentafluoride group (i.e., SF5) and at least one of which comprises a labile group (i.e., an amino, bromo or nitro group). Preferably, the compds. comprise either two sulfur pentafluoride groups or one sulfur pentafluoride group and one other polyfluorinated group, such as a trifluoromethyl group. These SF5 group-contg. compds. are prepd. by the direct fluorination of the corresponding disulfide or thiol group-contg. compds.; the products are intermediates which are useful in the prepn. of medicaments (no data).

Pentafluorosulfuranylbenzene derivative for liquid crystal mixture suitable for liquid crystal display. Kirsch, Peer; Krause, Joachim; Heckmeier, Michael. (Merck Patent Gmbh, Germany). Ger. Offen. (2002), 46 pp. CODEN: GWXXBX DE 10124480 A1 20020110 Patent written in German. Application: DE 2001-10124480 20010519. Priority: DE 2000-10031383. CAN 136:93574 AN 2002:27562 CAPLUS (Copyright 2003 ACS)

Patent Family Information

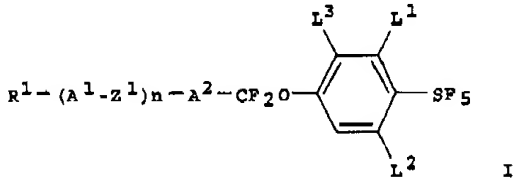
Patent No.	Kind	Date	Application No.	Date
DE 10124480	A1	20020110	DE 2001-10124480	20010519
US 2002028306	A1	20020307	US 2001-891527	20010627
JP 2002080452	A2	20020319	JP 2001-195814	20010628

Priority Application Information

DE 2000-10031383	20000628

Abstract

A new pentafluorosulfuranylbenzene deriv. represented by I (R1 = H, C□15-alkyl, alkenyl; A1, A2 = trans-cyclohexane-1,4-diyl, 1,4-phenylene, 1,4-bicyclo(2,2,2)-octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl, 1,2,3,4-tetrahydronaphthalene-2,6-diyl, cyclohexene-1,4-diyl; L1-3 = H, CN, F, Cl; Z1 = -COO-, -OCO-, -CH2O-, -O-, -OCH2-, -CH2CH2-, -CHFCH2-, -CH:CH-, -CF2CF2-, -CF2CH2-, -CF2CHF-, -CHFCF2-, -C.tplbond.C-, -C2F4-, -CF:CF-, -OCF2-, -CF2O-, single bond; n = 0-3) is synthesized and is used in a nematic liq. crystal mixt. suitable for a liq. crystal display. The nematic liq. crystal mixt. shows a high clear point and relatively high dielec. anisotropic value (□□).



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